Chapter 3 Consumer Mathematics: Insurance

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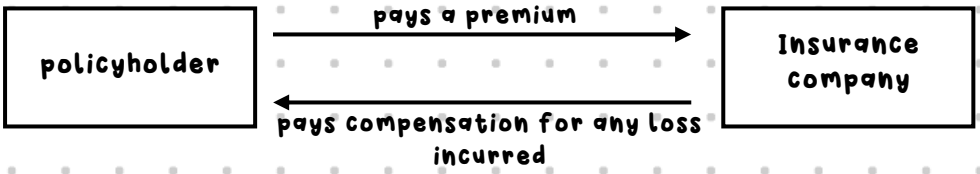
3.1 RISK AND INSURANCE COVERAGE

RISK

- In general, risk is the possibility of a disaster that cannot be avoided.
- For example, damage of property in a fire and expensive medical bills due to critical illness
- Important elements in the definition of risk are Risk is unpredictable and Risk involves loss

INSURANCE

- Insurance is intended to transfer risks from individuals to insurance organisations
- It is a contract signed between the insurance company and the insurance owner
- Under this contract, the insurance company promises to pay compensation for the loss covered in the policy, in return for the premium paid by the policyholder



- The amount of compensation payable to the policyholder is only the amount of the loss suffered
- This is because the key principle in the insurance system is to restore the financial position of the policyholder to the pre-loss condition, which is also known as the principle of indemnity
- Insurance cannot prevent a loss from occurring but can help to reduce financial burden borne by a policyholder in the occurrence of losses or accidents

LIFE INSURANCE

- The purpose of life insurance is to provide financial protection to family members who depend on the policyholder, when the policyholder dies
- Life insurance guarantees the payment of a stated amount of monetary benefits to the policyholder upon the death of the insured, or under other circumstances specified in the contract
- The risks covered by life insurance are death, loss of ability and critical illness
- However, if the policyholder is alive but suffers from a total and permanent disability, the policyholder may receive compensation from the insurance company in accordance with the terms set out in his/her life insurance policy

GENERAL INSURANCE

- General insurance provides coverage against any loss or damage incurred, apart from the risks covered by life insurance

TYPES OF GENERAL INSURANCE

- Motor Insurance
- Fire Insurance
- Medical and health Insurance
- Personal accident Insurance
- Travel Insurance

MOTOR INSURANCE

- Motor insurance provides coverage against any loss or damage related to the use of a motor vehicle

Coverage \ Policy	Act	Third party	Third party, fire and theft	Comprehensive
Liability to third party due to injury and death	Yes	Yes	Yes	Yes
Loss of property suffered by third party.	No	Yes	Yes	Yes
Loss to own vehicle due to accidental fire or theft.	No	No	Yes	Yes
Loss and damage to own vehicle due to accident.	No	No	No	Yes

- A comprehensive policy provides a thorough protection compared to the other three policies as above
- The similarity on these policies is to give a protection excluding the claims by the driver and passengers such as injury and death
- In motor insurance,
  - the first party → the driver (policyholder)
  - the second party → the insurance company
  - the third party → any other individuals that are involved in a accident caused by the driver, excluding the passenger

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FIRE INSURANCE

- Fire insurance provides coverage against damage caused by fire, lightning and explosion that occur at home or business premise
- Compensation will be paid by the insurance company to recover the policyholder's financial position, subject to the sum insured
- For coverage other than fire, lightning and explosion, policyholder may incorporate additional coverages such as hurricane, flood, riot and others into the existing fire policy at an additional premium

MEDICAL AND HEALTH INSURANCE

- Apart from the risk of death, you should also be aware of the risks of deteriorating health
- This is because you may have to bear medical expenses such as hospitalisation and surgery costs
- Some of the policies in this insurance are hospitalisation and surgical insurance, critical illness insurance, disability income insurance and hospital income insurance

PERSONAL ACCIDENT

- Personal accident insurance provides coverage in the occurrence that the policyholder suffers a bodily injury, disability or death resulting directly from accident
- This insurance is different from life insurance, and medical and health insurance

TRAVEL INSURANCE

- Travel insurance protects policyholder against losses during travel whether by land, air or sea such as death and permanent disability, loss of luggage, passport and money, medical expenses and others.

GROUP INSURANCE

- Group insurance provides coverage to a group of individuals, typically employees in a company or pupils in schools and students in educational institutions

GROUP INSURANCE FOR ORGANISATION

- Financial protection is provided to employees of an organisation in the events of death, disability, hospitalisation and surgery under certain policy and coverage limit
- With this insurance, the employees of the company will enjoy proper protection from their employer

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GROUP INSURANCE FOR PUPILS

- Financial protection is provided to pupils in the events of death, paralysis, disability and wheelchair allowance under certain policy and coverage limit
- For example, Ministry of Education Malaysia has implemented a protection scheme for pupils of government schools and government-aided schools under the Takaful Pelajar Sekolah Malaysia (TPSM) scheme

CALCULATE A PREMIUM FOR LIFE INSURANCE

- For life insurance, the amount of premium paid depends on the chosen face value, age, gender and smoking status
- This premium calculation is based on a premium rate schedule for every RMx face value

$$\text{Premium} = \frac{Face\ value\ of\ policy}{RMx} \times \begin{pmatrix} Premium\ rate \\ per\ RMx \end{pmatrix}$$

- The face value of policy is the amount of money chosen by the policyholder to obtain insurance coverage
- This amount will be paid to the beneficiaries in the occurrence of death or total and permanent disability of the policyholder on the policy's maturity date

CALCULATE A PREMIUM FOR MOTOR INSURANCE

- Motor insurance is calculated based on the Motor Tariff that provides the minimum premium for the insurance coverage
- These tariffs are regulated by law
- The amount of the premium depends on the factors such as the type of vehicle and its usage, the engine capacity, the type and amount of coverage desired
- The premiums charged are different for each motor policy
- Act policy and Third party policy – Depending only on the engine capacity of vehicle
- Comprehensive policy– Depending on the engine capacity and the market value of the vehicle when you want to insure it
- Third party, fire and theft policy – The premium rate is 75% of the comprehensive policy's basic premium and depending on the engine capacity and the market value of the vehicle when you want to insure it
- THE FORMULAE TO CALCULATE THE BASIC PREMIUM OF THE COMPREHENSIVE POLICY:
  - For Peninsular Malaysia, the basic premium
    = Rate for the first RM1 000 + RM26 for each RM1 000 or part thereof on value exceeding the first RM1 000
  - For Sabah and Sarawak, the basic premium
    = Rate for the first RM1 000 + RM20.30 for each RM1 000 or part thereof on value exceeding the first RM1 000

DEDUCTIBLE

- An amount that must be borne by the policyholder before they can make a claim from the insurance company
- Deductible is commonly found in the contract of property insurance, medical and health insurance and motor insurance
- This provision is not in the life insurance and personal liability insurance

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CO-INSURANCE IN PROPERTY

- Co-insurance is the cost sharing of the loss between the insurance company and the policyholder
- For the co-insurance clause in property insurance, the policyholder is required to insure his property at a certain amount based on the percentage of co-insurance determined by the insurance company from the insurable value of the property
- If this co-insurance provision is not met, the policyholder will have to bear some of the losses together with the insurance company
- if the policyholder wishes to recover full compensation for the partial loss incurred, he must insure the property in accordance with his co-insurance provisions
- AMOUNT OF REQUIRED INSURANCE
  = Percentage of co-insurance × Insurable value of property
- If the insured value = amount of required insurance
  Amount of compensation
  = Amount of loss − Deductible
  where the amount of loss ≤ the amount of insurance purchased
- If the insured value < amount of required insurance
  Amount of compensation
  $= \left(\frac{Amount\ of\ insurance\ purchased}{Amount\ of\ required\ insurance} \right) \times (\text{Amount of loss}) - (\text{Deductible})$
- Suffered a total loss
  Amount of compensation
  = (Amount of insurance purchased) − (Deductible)
- The insurable value of property is the actual value of assets, the cost of replacement of the property or any other value stated in the valuation clause of insurance policy

CO-INSURANCE IN HEALTH INSURANCE

- In health insurance contracts, co-insurance is stipulated by the percentage participation clause, particularly for the major medical insurance policy
- In this clause, policyholder is required to bear a portion of the medical costs covered by the contract at an agreed rate after taking into account the deductible provisions, if any
- For example, 80/20 co-insurance percentage participation means that the insurance company will bear 80% of the medical costs covered by the policy and 20% will be borne by the policyholder

THE DIFFERENCE BETWEEN DEDUCTIBLE AND CO-INSURANCE

- Deductible is an amount the policyholders must pay in advance regardless of the amount of eligible benefits
- Co-insurance is a cost sharing where the policyholders borne a certain percentage of the loss with the insurance company

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